

## EAST Search History

## EAST Search History (Prior Art)

| Ref # | Hits    | Search Query  | DBs   | Default Operator | Plurals | Time Stamp          |
|-------|---------|---|---|------------------|---------|---------------------|
| L1    | 731     | Franz-Keldysh (franz adj keldysh)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2011/08/26<br>11:00 |
| L2    | 1560762 | ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path)))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2011/08/26<br>11:01 |
| L3    | 2449228 | electrode   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2011/08/26<br>11:01 |
| L4    | 478     | 1 and 2   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2011/08/26<br>11:01 |
| L5    | 426460  | bias\$3 near5 (electrode signal volt \$3 current charge circuit\$3)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2011/08/26<br>11:04 |
| L6    | 315     | 4 and 5   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2011/08/26<br>11:05 |
| L7    | 762046  | "group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR               | ON      | 2011/08/26<br>11:05 |

|     |       |  |   |    |     |                     |
|-----|-------|--|---|----|-----|---------------------|
| L8  | 50    | 6 and 7  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:05 |
| L9  | 24619 | ((peak-to-peak) (peak near5 peak)<br>pk-pk ((minimum "min" minima<br>lowest) near5 ("max" maximum<br>maxima highest)) extrema) near5<br>amplitude  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:09 |
| L10 | 1     | 8 and 9  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:10 |
| L11 | 18726 | ((359/245,315,247,251-<br>252,254,108,237-238,278-279,290-<br>292,298,300-302) or (385/1-<br>3,40,129-132,5,8-9)).CCLS   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/08/26<br>11:11 |
| L12 | 22    | split\$4 same combiner same<br>electrode same ("MZ<br>interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) same<br>bias | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L13 | 9     | L11 and L12  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L14 | 2367  | split\$4 same combiner same ("MZ<br>interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path)))                                | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L15 | 2147  | (first adj electrode) near10 bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L16 | 2844  | (second adj electrode) near10 bias   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |

|     |         |   |   |    |     |                     |
|-----|---------|---|---|----|-----|---------------------|
| L17 | 1       | (L14 and L15 and L16) not L13   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L18 | 4521    | combiner same ("MZ<br>interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L19 | 2       | (L15 and L16 and L18) not (L13<br>L17)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L20 | 1560762 | ("MZ interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path)))                  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L21 | 13      | L12 not (L19 L13 L17)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L22 | 6       | ((("5524076") or ("5778113") or<br>("5991471")).PN.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/08/26<br>11:11 |
| L23 | 2       | ("5267073").PN.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/08/26<br>11:11 |
| L24 | 699     | Franz-Keldysh   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L25 | 461     | L20 and L24   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |

|     |       |  |   |    |     |                     |
|-----|-------|--|---|----|-----|---------------------|
| L26 | 159   | L11 and L25  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L27 | 1     | L15 and L16 and L26  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L28 | 20    | (L19 L13 L17 L21 L22 L23) and<br>(phase adj shift\$3)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L29 | 731   | Franz-Keldysh (franz adj keldysh)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L30 | 3     | L28 and L29  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L31 | 5136  | ("MZ interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) near20<br>(silicon near5 substrate)                           | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L32 | 18726 | ((359/245,315,247,251-<br>252,254,108,237-238,278-279,290-<br>292,298,300-302) or (385/1-<br>3,40,129-132,5,8-9)).CCLS   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/08/26<br>11:11 |
| L33 | 22    | split\$4 same combiner same<br>electrode same ("MZ<br>interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) same<br>bias | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L34 | 9     | L32 and L33  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |

|     |      |  |   |    |     |                     |
|-----|------|--|---|----|-----|---------------------|
| L35 | 2367 | split\$4 same combiner same ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L36 | 2147 | (first adj electrode) near10 bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L37 | 2844 | (second adj electrode) near10 bias   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L38 | 1    | (L35 and L36 and L37) not L34  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L39 | 4521 | combiner same ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path)))               | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L40 | 2    | (L36 and L37 and L39) not (L34 L38)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L41 | 13   | L33 not (L40 L34 L38)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L42 | 6    | ((("5524076") or ("5778113") or ("5991471")).PN.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/08/26<br>11:11 |
| L43 | 2    | ("5267073").PN.  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/08/26<br>11:11 |

|     |         |  |   |    |    |                     |
|-----|---------|--|---|----|----|---------------------|
| L44 | 1       | (L40 L34 L38 L41 L42 L43) and L31  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L45 | 853     | ("CW" continuous-wave (continuous adj wave)) near20 electrode  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L46 | 1560762 | ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L47 | 145     | L45 and L46  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L48 | 28795   | third adj electrode  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L49 | 9       | L47 and L48  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L50 | 2560    | (electro-optic\$3 (electro adj optic \$3) electrooptic\$3) adj convert\$4  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L51 | 168     | L46 same L50   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L52 | 15      | L32 and L51  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |

|     |       |   |   |    |    |                     |
|-----|-------|---|---|----|----|---------------------|
| L53 | 6     | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) same ((electro-optic \$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)) and (split\$4) and combiner               | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L54 | 6     | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) same ((electro-optic \$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)) same electrode                            | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L55 | 5     | L54 not L53   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L56 | 22    | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) and ((electro-optic\$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)) and split\$4 and combiner and electrode     | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L57 | 17    | L56 not (L53 L52)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L58 | 5     | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) and electrode) and (transmit\$5 adj station) and ((electro-optic\$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L59 | 34044 | (electro-optic\$3 (electro adj optic\$3) electrooptic\$3) near10 (convert\$4 electric\$3 signal wavelength wave-length (wave adj length))   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |

|     |       |   |   |    |     |                     |
|-----|-------|---|---|----|-----|---------------------|
| L60 | 18726 | ((359/245,315,247,251-252,254,108,237-238,278-279,290-292,298,300-302) or (385/1-3,40,129-132,5,8-9)).CCLS.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/08/26<br>11:11 |
| L61 | 2147  | (first adj electrode) near10 bias   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L62 | 2844  | (second adj electrode) near10 bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L63 | 1300  | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))                        | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L64 | 5     | L63 and L61 and L62   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |
| L65 | 3     | (((((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) same split\$4 same | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:11 |



|     |    |  |   |    |    |                     |
|-----|----|--|---|----|----|---------------------|
|     |    | combiner) and electrode\$1   |   |    |    |                     |
| L66 | 67 | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) and split\$4 and combiner) and electrode\$1 and (bias\$3 adj (signal voltage)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L67 | 28 | L60 and L66  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L68 | 22 | (((((modulat\$5 ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide))) near5 (branch arm path)))) near10 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride)))) and electrode\$1   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L69 | 6  | L59 and (L68 L67 L65 L64)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |
| L70 | 49 | 8 not (L58 L13 L17 L19 L21 L27 L28 L30 L44 L49 L52 L55 L57 L69)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/08/26<br>11:11 |

|     |       |   |   |    |     |                     |
|-----|-------|---|---|----|-----|---------------------|
| L71 | 2260  | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near20 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:17 |
| L72 | 10    | 70 and 71   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:18 |
| L87 | 266   | 71 and 5 and 3  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:31 |
| L88 | 262   | 87 not (L58 L13 L17 L19 L21 L27 L28 L30 L44 L49 L52 L55 L57 L69)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:31 |
| L89 | 0     | 9 and 88  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:31 |
| L90 | 86    | 60 and 88   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/08/26<br>11:31 |
| S1  | 17794 | ((359/245,315,247,251-252,254,108,237-238,278-279,290-292,298,300-302) or (385/1-3,40,129-132,5,8-9)).CCLS.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2010/10/05<br>08:07 |

|     |      |   |   |    |    |                     |
|-----|------|---|---|----|----|---------------------|
| S2  | 189  | split\$4 same combiner same electrode same ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path)))           | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:10 |
| S3  | 18   | split\$4 same combiner same electrode same ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path))) same bias | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:10 |
| S4  | 8    | S1 and S3   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:11 |
| S5  | 2212 | split\$4 same combiner same ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path)))                          | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:16 |
| S6  | 1937 | (first adj electrode) near10 bias   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:17 |
| S7  | 2607 | (second adj electrode) near10 bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:17 |
| S8  | 0    | (S5 and S6 and S7 and S1) not S4  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:17 |
| S9  | 1    | (S5 and S6 and S7) not S4   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:17 |
| S10 | 4239 | combiner same ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path)))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>08:18 |

|     |         |  |   |    |     |                     |
|-----|---------|--|---|----|-----|---------------------|
| S11 | 2       | (S6 and S7 and S10) not (S4 S9)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:18 |
| S12 | 1397207 | ("MZ interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:20 |
| S13 | 121     | (S6 and S7 and S12) not (S11 S4<br>S9)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:20 |
| S14 | 40      | S13 and S1   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:20 |
| S15 | 23106   | combiner and split\$4  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:20 |
| S16 | 0       | S14 and S15  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:21 |
| S17 | 10      | S3 not (S11 S4 S9)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:21 |
| S18 | 6       | ((("5524076") or ("5778113") or<br>("5991471")).PN.  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2010/10/05<br>08:28 |
| S19 | 2       | ("5267073").PN.  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2010/10/05<br>08:38 |

|     |       |  |   |    |     |                     |
|-----|-------|--|---|----|-----|---------------------|
| S20 | 658   | Franz-Keldysh  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:40 |
| S21 | 431   | S12 and S20  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:40 |
| S22 | 143   | S1 and S21   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:40 |
| S23 | 1     | S6 and S7 and S22  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:41 |
| S24 | 19    | (S11 S4 S9 S17 S18 S19) and<br>(phase adj shift\$3)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:43 |
| S25 | 689   | Franz-Keldysh (franz adj keldysh)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:44 |
| S26 | 3     | S24 and S25  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>08:44 |
| S27 | 4843  | ("MZ interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) near20<br>(silicon near5 substrate) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>14:03 |
| S28 | 17794 | ((359/245,315,247,251-<br>252,254,108,237-238,278-279,290-<br>292,298,300-302) or (385/1-<br>3,40,129-132,5,8-9)). CCLS  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2010/10/05<br>14:04 |

|     |      |  |   |    |    |                     |
|-----|------|--|---|----|----|---------------------|
| S29 | 18   | split\$4 same combiner same electrode same ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path))) same bias | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |
| S30 | 8    | S28 and S29  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |
| S31 | 2212 | split\$4 same combiner same ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path)))                          | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |
| S32 | 1937 | (first adj electrode) near10 bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |
| S33 | 2607 | (second adj electrode) near10 bias   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |
| S34 | 1    | (S31 and S32 and S33) not S30  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |
| S35 | 4239 | combiner same ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path)))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |
| S36 | 2    | (S32 and S33 and S35) not (S30 S34)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |
| S37 | 10   | S29 not (S36 S30 S34)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:04 |

|     |         |  |   |    |     |                     |
|-----|---------|--|---|----|-----|---------------------|
| S38 | 6       | ((("5524076") or ("5778113") or ("5991471")).PN.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2010/10/05<br>14:04 |
| S39 | 2       | ("5267073").PN.  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2010/10/05<br>14:04 |
| S40 | 1       | (S36 S30 S34 S37 S38 S39) and S27  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>14:04 |
| S41 | 795     | ("CW" continuous-wave (continuous adj wave)) near20 electrode  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>14:07 |
| S42 | 1397207 | ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>14:08 |
| S43 | 135     | S41 and S42  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>14:08 |
| S44 | 26546   | third adj electrode  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>14:08 |
| S45 | 9       | S43 and S44  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>14:08 |
| S46 | 2452    | (electro-optic\$3 (electro adj optic \$3) electrooptic\$3) adj convert\$4  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>14:40 |

|     |     |   |   |    |    |                     |
|-----|-----|---|---|----|----|---------------------|
| S47 | 157 | S42 same S46  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:41 |
| S48 | 1   | (S36 S30 S34 S37 S38 S39) and<br>S47  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:41 |
| S49 | 14  | S28 and S47   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:41 |
| S50 | 143 | S47 not (S49 S48)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:57 |
| S51 | 157 | ("MZ interferometer" mach-zehnder<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) same<br>((electro-optic\$3 (electro adj optic<br>\$3) electrooptic\$3) adj convert\$4)                                    | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:57 |
| S52 | 0   | ("MZ interferometer" mach-zehnder<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) same<br>((electro-optic\$3 (electro adj optic<br>\$3) electrooptic\$3) adj convert\$4)<br>same (split\$4) same combiner   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:58 |
| S53 | 33  | ("MZ interferometer" mach-zehnder<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) same<br>((electro-optic\$3 (electro adj optic<br>\$3) electrooptic\$3) adj convert\$4)<br>and (split\$4) andcombiner      | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:58 |
| S54 | 6   | ((("MZ interferometer" mach-<br>zender mach-zehnder (mach adj<br>(zender zehnder)) "MZ"<br>waveguide wave-guide (wave adj<br>guide) (modulat\$5 adj (branch<br>arm path))) same ((electro-optic<br>\$3 (electro adj optic\$3)<br>electrooptic\$3) adj convert\$4))<br>and (split\$4) and combiner | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>14:59 |



|     |       |   |   |    |    |                     |
|-----|-------|---|---|----|----|---------------------|
| S55 | 6     | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) same ((electro-optic\$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)) same electrode                         | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>15:01 |
| S56 | 5     | S55 not S54   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>15:01 |
| S57 | 20    | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) and ((electro-optic\$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)) and split\$4 and combiner and electrode | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>15:03 |
| S58 | 15    | S57 not (S54 S49)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>15:04 |
| S59 | 0     | S28 and S58   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>15:05 |
| S60 | 139   | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) and electrode) and (transmit\$5 adj station)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>15:08 |
| S61 | 23106 | combiner and split\$5   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>15:09 |
| S62 | 8     | S60 and S61   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2010/10/05<br>15:09 |

|     |       |  |   |    |     |                     |
|-----|-------|--|---|----|-----|---------------------|
| S63 | 5     | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) and electrode) and (transmit\$5 adj station) and ((electro-optic\$3 (electro adj optic \$3) electrooptic\$3) adj convert\$4) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2010/10/05<br>15:12 |
| S64 | 18313 | ((359/245,315,247,251-252,254,108,237-238,278-279,290-292,298,300-302) or (385/1-3,40,129-132,5,8-9)).CCLS.  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/03/25<br>22:36 |
| S65 | 20    | split\$4 same combiner same electrode same ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat \$5 adj (branch arm path))) same bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S66 | 8     | S64 and S65  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S67 | 2308  | split\$4 same combiner same ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat \$5 adj (branch arm path)))   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S68 | 2056  | (first adj electrode) near10 bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S69 | 2742  | (second adj electrode) near10 bias   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S70 | 1     | (S67 and S68 and S69) not S66  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |

|     |         |  |   |    |     |                     |
|-----|---------|--|---|----|-----|---------------------|
| S71 | 4407    | combiner same ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S72 | 2       | (S68 and S69 and S71) not (S66 S70)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S73 | 1487017 | ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path)))               | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S74 | 12      | S65 not (S72 S66 S70)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S75 | 6       | ((("5524076") or ("5778113") or ("5991471")).PN.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/03/25<br>22:36 |
| S76 | 2       | ("5267073").PN.  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/03/25<br>22:36 |
| S77 | 683     | Franz-Keldysh  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S78 | 451     | S73 and S77  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S79 | 154     | S64 and S78  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |

|     |       |  |   |    |     |                     |
|-----|-------|--|---|----|-----|---------------------|
| S80 | 1     | S68 and S69 and S79  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S81 | 19    | (S72 S66 S70 S74 S75 S76) and<br>(phase adj shift\$3)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S82 | 715   | Franz-Keldysh (franz adj keldysh)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S83 | 3     | S81 and S82  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S84 | 5009  | ("MZ interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) near20<br>(silicon near5 substrate)                           | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S85 | 18313 | ((359/245,315,247,251-<br>252,254,108,237-238,278-279,290-<br>292,298,300-302) or (385/1-<br>3,40,129-132,5,8-9)).CCLS.  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/03/25<br>22:36 |
| S86 | 20    | split\$4 same combiner same<br>electrode same ("MZ<br>interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) same<br>bias | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S87 | 8     | S85 and S86  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S88 | 2308  | split\$4 same combiner same ("MZ<br>interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path)))                                | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |

|     |      |   |   |    |     |                     |
|-----|------|---|---|----|-----|---------------------|
| S89 | 2056 | (first adj electrode) near10 bias   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S90 | 2742 | (second adj electrode) near10 bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S91 | 1    | (S88 and S89 and S90) not S87   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S92 | 4407 | combiner same ("MZ<br>interferometer" mach-zender<br>mach-zehnder (mach adj (zender<br>zehnder)) "MZ" waveguide wave-<br>guide (wave adj guide) (modulat<br>\$5 adj (branch arm path))) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S93 | 2    | (S89 and S90 and S92) not (S87<br>S91)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S94 | 12   | S86 not (S93 S87 S91)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |
| S95 | 6    | ((("5524076") or ("5778113") or<br>("5991471")).PN.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/03/25<br>22:36 |
| S96 | 2    | ("5267073").PN.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/03/25<br>22:36 |
| S97 | 1    | (S93 S87 S91 S94 S95 S96) and<br>S84  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:36 |

|      |         |  |   |    |    |                     |
|------|---------|--|---|----|----|---------------------|
| S98  | 825     | ("CW" continuous-wave (continuous adj wave)) near20 electrode  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S99  | 1487017 | ("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat \$5 adj (branch arm path)))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S100 | 142     | S98 and S99  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S101 | 27752   | third adj electrode  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S102 | 9       | S100 and S101  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S103 | 2507    | (electro-optic\$3 (electro adj optic \$3) electrooptic\$3) adj convert\$4  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S104 | 163     | S99 same S103  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S105 | 15      | S85 and S104   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S106 | 6       | ((("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) same ((electro-optic \$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)) and (split\$4) and combiner | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |

|      |        |   |   |    |    |                     |
|------|--------|---|---|----|----|---------------------|
| S107 | 6      | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) same ((electro-optic\$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)) same electrode   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S108 | 5      | S107 not S106   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S109 | 22     | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) and ((electro-optic\$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)) and split\$4 and combiner and electrode   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S110 | 17     | S109 not (S106 S105)  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S111 | 5      | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path))) and electrode) and (transmit\$5 adj station) and ((electro-optic\$3 (electro adj optic\$3) electrooptic\$3) adj convert\$4)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S112 | 6      | (S111 S66 S70 S72 S74 S80 S81 S83 S97 S102 S105 S108 S110) and ((@ad>="20101005") (@pd>="20101005"))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:36 |
| S113 | 736579 | "group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:45 |

|      |      |  |   |    |     |                     |
|------|------|--|---|----|-----|---------------------|
| S114 | 1    | S112 and S113  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:45 |
| S115 | 2    | ("6744546").PN.  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/03/25<br>22:46 |
| S116 | 0    | S113 and S115  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:46 |
| S117 | 2178 | ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path))) near20 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:47 |
| S118 | 1819 | ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide) (modulat \$5 adj (branch arm path))) near10 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/25<br>22:47 |



|      |      |   |   |    |    |                     |
|------|------|---|---|----|----|---------------------|
| S119 | 1246 | ((("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:48 |
| S120 | 5    | S119 and S68 and S69  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:48 |
| S121 | 3    | (((((("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) same split\$4 same combiner) and electrode\$1 | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:52 |
| S122 | 67   | (((((("MZ interferometer" mach-zender mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:53 |

|      |    |   |   |    |    |                     |
|------|----|---|---|----|----|---------------------|
|      |    | adj telluride))) and split\$4 and combiner) and electrode\$1 and (bias\$3 adj (signal voltage))   |   |    |    |                     |
| S123 | 28 | S64 and S122  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:53 |
| S124 | 0  | (((((modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) and split\$4 and combiner) and electrode\$1 and (bias\$3 adj (signal voltage))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:55 |
| S125 | 0  | (((((modulat\$5 adj (branch arm path)))) near10 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) and split\$4 and combiner) and electrode\$1 and (bias\$3 adj (signal voltage)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:55 |
| S126 | 0  | (((((modulat\$5 adj (branch arm path)))) near10 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) and split\$4 and combiner) and electrode\$1                                    | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:56 |

|      |       |  |   |    |    |                     |
|------|-------|--|---|----|----|---------------------|
| S127 | 0     | (((((modulat\$5 adj (branch arm path)))) near10 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride)))) and electrode\$1   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:56 |
| S128 | 1426  | ((((( (branch arm path)))) near10 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride)))) and electrode\$1   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:56 |
| S129 | 20    | (((((modulat\$5 ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide waveguide (wave adj guide)))) near5 (branch arm path)))) near10 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride)))) and electrode\$1 | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/25<br>22:58 |
| S130 | 6514  | (electro-optic\$3 (electro adj optic \$3) electrooptic\$3) near10 convert \$4  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/26<br>08:39 |
| S131 | 33258 | (electro-optic\$3 (electro adj optic \$3) electrooptic\$3) near10 (convert \$4 electric\$3 signal wavelength wave-length (wave adj length))  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/26<br>08:40 |

|      |       |   |   |    |     |                     |
|------|-------|---|---|----|-----|---------------------|
| S132 | 18313 | ((359/245,315,247,251-252,254,108,237-238,278-279,290-292,298,300-302) or (385/1-3,40,129-132,5,8-9)).CCLS.   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | OFF | 2011/03/26<br>08:41 |
| S133 | 2056  | (first adj electrode) near10 bias   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/26<br>08:41 |
| S134 | 2742  | (second adj electrode) near10 bias  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/26<br>08:41 |
| S135 | 1246  | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))                        | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/26<br>08:41 |
| S136 | 5     | S135 and S133 and S134  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/26<br>08:41 |
| S137 | 3     | (((((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) same split\$4 same | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON  | 2011/03/26<br>08:41 |

|      |    |  |   |    |    |                     |
|------|----|--|---|----|----|---------------------|
|      |    | combiner) and electrode\$1   |   |    |    |                     |
| S138 | 67 | ((("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide) (modulat\$5 adj (branch arm path)))) near5 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) and split\$4 and combiner) and electrode\$1 and (bias\$3 adj (signal voltage)) | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/26<br>08:41 |
| S139 | 28 | S132 and S138  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/26<br>08:41 |
| S140 | 20 | (((((modulat\$5 ("MZ interferometer" mach-zehnder mach-zehnder (mach adj (zender zehnder)) "MZ" waveguide wave-guide (wave adj guide))) near5 (branch arm path)))) near10 ("group IV semiconductor" (group-IV-semiconductor) (group adj IV adj semiconductor) ((carbon silicon germanium tin lead ununquadium) near5 semiconductor) (silicon adj (carbide germanium)) diamond (lead adj (selenide sulfide telluride)) (tin adj (sulfide telluride)) (lead adj tin adj telluride) (thallium adj tin adj telluride) (thallium adj germanium adj telluride))) and electrode\$1  | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/26<br>08:41 |
| S141 | 6  | S131 and (S140 S139 S137 S136)   | US-PGPUB;<br>USPAT; USOCR;<br>FPRS; EPO;<br>JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2011/03/26<br>08:41 |

**EAST Search History (I nterference)**

&lt;This search history is empty&gt;

**8/ 26/ 2011 11:53:09 AM****H:\ EAST\ Workspaces\ 10593, 697.wsp**